The opinion in support of the decision being entered today is
not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte ALBERTUS CORNELIS DEN BRINKER

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Appeal 2007-3257
Application 10/046,632
Technology Center 2600

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Decided: September 11, 2007

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Before KENNETH W. HAIRSTON, MAHSHID D. SAADAT,
and MARC S. HOFF, *Administrative Patent Judges*.

SAADAT, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's
Final Rejection of claims 1-17, which are all of the claims pending in this
application. We have jurisdiction under 35 U.S.C. § 6(b).

Appellant's invention relates to a parametric encoder and a method for encoding an audio or speech signal into sinusoidal code data (Specification 1). According to Appellant, improvements to a known parametric encoder embodied in the claimed subject matter provide for establishing a required time-frequency resolution trade-off without scattering of components over various scales and/or merging the data retrieved at different scales (Specification 2). The claimed invention requires a segmentation unit to carry out a frequency-warping operation in order to transform the output samples onto a frequency-warped domain and to provide a post-processing filter for re-mapping the sinusoidal code data output from the sinusoidal estimation unit to the original frequency domain of the input signal (*id.*).

Claim 1 is representative of the claimed subject mater and reads as follows:

1. A parametric encoder for encoding an audio or speech signals s into sinusoidal code data, comprising:

a segmentation unit (120) for segmenting said signal s into at least one single scale segment $x_m(n)$ with $m = 1 \ldots M$ and for outputting the samples $x_m(0), \ldots, x_m(L-1)$ of said segment $x_m(n)$; and

a sinusoidal estimation unit (140) for estimating the sinusoidal code data respresenting said segment $x_m(n)$ from the received samples $x_m(0), \ldots, x_m(L-1)$; characterized in that

the segmentation unit (120) is further embodied for carrying out a frequency-warping operation in order to transform the output samples $x_m(0), \ldots, x_m(L-1)$ onto a frequency-warped domain; and

a post-processing filter (160) is provided for re-mapping said sinusoidal data output from the sinusoidal estimation unit (140) to an original frequency domain of the signal s.

The prior art references relied upon by the Examiner in rejecting the claims on appeal are:

Oppenheim, "Computation of Spectra with Unequal Resolution Using the Fast Fourier Transform," Proc. IEEE, Feb. 1971, pp. 299-301.

Kleijn, "Speech Coding and Synthesis," Elsevier Science, 1995, pp. 36-39.

Elder, "Audio Coding Using a Psychoacoustic Pre- and Post-Filter," Proceedings ICASSP, 2000, pp. 881-884.

Härmä, "Frequency-Warped Signal Processing for Audio Applications," J. Audio Eng. Soc., Vol. 48, No. 11, Nov. 2000, pp. 1011-1031.

Claims 1-3 and 9-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Elder and Kleijn.

Claims 4, 5, 7, 8, 13, 14, 16, and 17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Elder, Kleijn, and Härmä.

Claims 6 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Elder, Kleijn, Härmä, and Oppenheim.

We make reference to the Brief and Answer for the respective positions of Appellant and the Examiner.

We affirm.

THE ISSUE

The issue is whether Appellant has shown that the Examiner erred in rejecting the claims under 35 U.S.C. § 103(a). Appellant focuses on the coding sequence described in Kleijn and alleges that such sinusoidal code is not the same as the claimed estimating the sinusoidal code data (Br. 9).

Appellant further argues that the transform function in Kleijn is not an algorithmic estimation nor its taking of a fast Fourier Transform (FFT) relates to estimating sinusoidal code data (Br. 9-10). Therefore, the issue turns on whether the combination of Elder and Kleijn teaches or suggests the claimed subject matter related to estimating the sinusoidal code data.

FINDINGS OF FACT

The following findings of fact (FF) are relevant to the issue at hand and are believed to be supported by a preponderance of the evidence.

1.   Kleijn generally relates to parametric coders for speech signal processing (P. 36, § 8) and specifically, describes sinusoidal coders as a natural processing method when the spectrum for voice speech is considered (P. 37, § 8.2).

2.   Kleijn further describes the coding for windowed signals which obtains the complex spectrum of the signal by means of a fast Fourier Transform (FFT). The spectrum is separated into magnitude and phase spectra. The peaks in the magnitude spectrum are determined, and the rest of the spectrum is effectively set to zero. The magnitudes, the phases, and the frequencies of this sparse spectrum are quantized and their indices are transmitted to the decoder (P. 37, § 8.2, 3rd ¶).

3.   Appellant's Specification describes that the "estimation" performed by the sinusoidal estimation unit on the samples "may be done by carrying out a Fourier transformation on said frequency-warped samples and subsequent, for instance, peak picking." (Specification 4:31 through 5:2).

4.   Appellant does not dispute the teachings of Elder, as asserted by the Examiner, and merely presents arguments directed to the teachings of

Kleijn (Br. 8-10). As conceded by Appellant, Elder describes the claimed invention, except for the sinusoidal estimation unit for estimating the sinusoidal code data representing the segments from the received samples (Br. 8).

PRINCIPLES OF LAW

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *See In re Kahn*, 441 F.3d 977, 987-988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006), *In re Young*, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991) and *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). Moreover, in evaluating such references it is proper to take into account not only the specific teachings of the references but also the inferences which one skilled in the art would reasonably be expected to draw therefrom. *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

In identifying a reason that would have prompted a person of ordinary skill in the relevant field to combine the prior art teachings, the Examiner must show some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR Int'l. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007).

ANALYSIS

Upon a review of the instant disclosure, we find that Appellant's sinusoidal estimation unit performs the same function of the sinusoidal coders of Kleijn (FF 2 & 3). In that regard, we agree with the Examiner (Answer 11) that based on the description of Appellant's sinusoidal

estimation unit in the Specification (FF 3), the sinusoidal coder of Kleijn teaches the claimed sinusoidal estimation.

We remain unconvinced by Appellant's argument that the applied prior art must also show that the transform is an algorithmic estimation, or that the resulting spectrum is an estimation (Br. 9). We note that the claims neither recite an algorithmic estimation nor include limitations that require an "algorithmic transformation." Additionally, we disagree with Appellant that the taking of a fast Fourier Transform of Kleijn relates to sinusoidal coding and not the claimed estimating sinusoidal code (Br. 10), since Appellant's own disclosure provides for the same fast Fourier Transform as the way of carrying out the estimation (FF 3). Therefore, as broadly as claimed and consistent with the Specification, Appellant's recited sinusoidal estimation unit reads on the coder of Kleijn. In other words, one of ordinary skill in the art would have used the encoder of Elder in combination with the sinusoidal estimation unit taught by Kleijn for benefiting from its natural processing of the spectrum for voiced speech (FF 1).[1]

On the record before us, it follows that in this case Appellant has not shown that the Examiner erred in rejecting Claim 1 under the § 103(a) rejection. Since Appellant's arguments focus on the patentability of claim 1 without addressing the various rejections of the remaining claims (Br. 10-11), claims 2-17 fall with claim 1.

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[1] Although not discussed by the Examiner, we note that the background of the invention in Figure 5 also discloses a sinusoidal estimation unit 140' as a known component in a parametric encoder (Specification 1).

CONCLUSION OF LAW

On the record before us, Appellant has failed to show that the Examiner has erred in rejecting the claims or the rejection is not supported by a legally sufficient basis for holding that the combined teachings of the references would have suggested to the skilled artisan all of the recited method steps. Therefore, we sustain the 35 U.S.C. § 103 rejection of claims 1-3 and 9-12 over Elder and Kleijn, of claims 4, 5, 7, 8, 13, 14, 16, and 17 over Elder, Kleijn, and Härmä, and of claims 6 and 15 over Elder, Kleijn, Härmä, and Oppenheim.

DECISION

The decision of the Examiner rejecting claims 1-17 under 35 U.S.C. § 103 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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